

Applicant: Eichen et al.
Application No.: 09/674,090

Amendments to Drawings:

Please replace drawing sheets 3/44, 18/44, 23/44, 24/44, 28/44 and 44/44 with the enclosed REPLACEMENT SHEETS 3/44, 18/44, 23/44, 24/44, 28/44 and 44/44, respectively.

REMARKS

After the foregoing amendment, Claims 1, 4 – 9, 18 – 20, 22 – 26, 28, 35 – 39, 41, 43 – 44, 47 – 51, 53 – 57, 60 – 63 and 65 are pending in this application. Claims 1, 19, 20, 22 – 26, 28, 35, 37 – 39, 43 – 44, 49 – 51, and 65 have been amended without prejudice. The drawings and specification are amended to correct formalities. Support for the amendments can be found at page 6, lines 5 – 16. Applicant submits that no new matter has been introduced into the application by these amendments.

Objection to the Oath or Declaration

The Action states that the oath or declaration is defective, and a new oath or declaration is required that identifies the application by number and filing date. The Action also states that the declaration is defective for not providing the residence data for the inventors. A new declaration is enclosed. Applicants request withdrawal of the objection.

Objection to the Drawings

The Action objects to various drawings. Applicants amended the drawings and specification to conform to the matters discussed in the Action. The following changes were made to the drawings:

On sheet 3/44, reference characters 102 and 104 were changed to 162 and 164, respectively;

on sheet 23/44, reference characters 502 and 504 were changed to 502a and 504a, respectively;

on sheet 24/44, reference characters 506 and 508 were changed to 506a and 508a, respectively;

on sheet 28/44, reference character 708 was changed to 718; and

on sheet 44/44, reference character 1010 was changed to 1010a.

Applicants request withdrawal of the objection.

Objection to the Specification

The Action objects to the specification on the basis that the abstract included the word “said” and that the Brief Description of the Drawings did not list Figs. 1A – 1B and 2A – 2D. Applicants amended the specification to obviate the objection, and request withdrawal of the same.

Claim Objections

The Action objects to claims 1, 37, and 22 for including the term “component” and suggests amending the claims to recite “target component.” Amendments are made to insert “target” and coordinate the use of “target component.”

The Action objects to claims 20 and 39 for incorrect status identifiers. Based on the objection, it is not clear whether the previous amendments to claims 20 and 39 are entered. For this reason, Applicants present claims 20 and 39 with the status identifier “Currently amended,” and with all of the amendments in the previous reply and this reply combined.

The Action objects to claims 20, 23, 25 – 26, 28, 35, 37 – 39 and 4 – 43 for various reasons. Obviating amendments are made. Applicants note that claim 1 does not limit the target component to a nucleic acid. Further, claim 43 does not limit the recognition moiety to an oligonucleotide.

Applicants request withdrawal of the claim objections.

Claim Rejections - 35 USC §102

The Action rejects claims 25, 26, 28, 37, 50 and 51 as anticipated by Mroczkowski (WO 90/053000). Claims 25, 26, 28, 37, 50 and 51 directly or indirectly recite that nucleation-center forming entities “non-specifically” bind to targets. Specificity is achieved by binding of a recognition moiety to a target component. But sensitivity can be enhanced non-specifically through non-specific binding of the nucleation-center forming entities to targets.

The Action admits that Mroczkowski discloses antibodies as a way to attach gold particles to a target. Action, page 11. One of ordinary skill in the art would appreciate that an antibody specifically binds to its target. Indeed, the Action admits that Mroczkowski teaches “specifically” binding conductively labeled antibody to a biological target. Action, page 60.

Mroczkowski does not disclose all of the elements of any one of claims 25, 26, 28, 37, 50 and 51 and cannot anticipate these claims. Applicants believe that the

rejection of claims 25, 26, 28, 37, 50 and 51 under 35 U.S.C. § 102 is overcome and request withdrawal of the same.

Claim Rejections - 35 USC §103(a)

Mroczkowski and Hollis

The Action rejects claims 1, 4 – 7, 18 – 20, 22 – 24, 43, 44, 47 – 49, 54, 55, 57, 62 and 65 under 35 U.S.C. § 103(a) and states that these claims are obvious over Mroczkowski in view of Hollis (U.S. Patent No. 5,653,939). Each of these claims directly or indirectly recites that nucleation-center forming entities “non-specifically” bind to targets.

As set forth above, Mroczkowski teaches labeling a target with gold by utilizing gold labeled antibody that specifically binds to the target, and the Action admits the same. Mroczkowski contemplates metallization after specifically binding the gold labeled agent in certain instances (See for example, Example 2.C.). The metallization may aid in detecting a conductance change associated with the specifically bound gold labeled antibody. But Mroczkowski does not teach an intermediate reagent such as the recited “nucleation-center forming entities” that “non-specifically” bind to target to enhance sensitivity.

Hollis teaches obtaining sensitivity by spacing electrodes close together:

Most importantly, the spacing between the upper and lower electrodes is of the order of the length (or diameter in solution) of the target DNA molecule. Therefore, the ratio of the target DNA to solvent in the

interelectrode space is high, thereby giving greatest sensitivity to the presence or absence of the target DNA during an electrical measurement.

Hollis, column 5, lines 62 – 67. Hollis does not teach enhancing sensitivity with “nucleation-center forming entities.” Instead, Hollis teaches away from such a reagent by teaching one of ordinary skill in the art to limit the spacing between electrodes in order to enhance sensitivity.

The combination of Mroczkowski and Hollis fails to teach or suggest all of the elements of any one of claims 1, 4 – 7, 18 – 20, 22 – 24, 43, 44, 47 – 49, 54, 55, 57, 62 and 65. Further, the combination teaches away from claims 1, 4 – 7, 18 – 20, 22 – 24, 43, 44, 47 – 49, 54, 55, 57, 62 and 65.

Based on the foregoing, Applicants believe the rejection of claims 1, 4 – 7, 18 – 20, 22 – 24, 43, 44, 47 – 49, 54, 55, 57, 62 and 65 under 35 U.S.C. § 103(a) is overcome and request withdrawal of the same.

Mroczkowski, Hollis, Kidwell and Houthoff

The Action rejects claims 8 and 9 and states that they are obvious over Mroczkowski in view of Hollis, Kidwell (U.S. Patent No. 5,384,265) and Houthoff (U.S. Patent No. 5,985,566). Claims 8 and 9 indirectly depend from claim 1 and include all of the elements of claim 1. For at least the reasons set forth above, the combination of cited prior art references fails to render claims 8 and 9 unpatentable.

The Action states that Kidwell teaches colloidal gold platinum to immobilize proteins. Action, page 24. The Action also states that Houthoff teaches “that platinum may be conjugated (complexed) to biological molecules, such as proteins and nucleic acids, and used to detect the presence of a target molecule that binds to the platinum immobilized biological molecule...” and “silver enhancement” through the platinum complex. *Id.*, underline emphasis added.

As set forth in the Action, Houthoff further teaches away from nucleation-center forming entities that non-specifically bind targets. Indeed, Houthoff requires targeted delivery of platinum. The further combination with Kidwell, as described by the Action, adds nothing to teach or suggest non-specific binding of nucleation-center forming entities. One of ordinary skill in the art would learn from the combination of Mroczkowski, Hollis, Kidwell and Houthoff that a nucleation-center forming entity must be specifically bound to a target. The combination fails to teach or suggest all of the elements of either of claims 8 and 9 and also teaches away from these claims.

Based on the foregoing, Applicants believe that the rejection of claims 8 and 9 under 35 U.S.C. § 103(a) is overcome and request withdrawal of the same.

Mroczkowski and Olsen

The Action rejects claims 35 and 41 and states that they are obvious over Mroczkowski in view of Olsen (U.S. Patent No. 5,614,832). Claim 35 recites a device

adapted to receive reagents that include “a solution comprising nucleation-center forming entities for non-specifically binding.” The device may achieve specificity of binding through a recognition element binding to a target component. But sensitivity may be increased through “a solution comprising nucleation-center forming entities for non-specifically binding.” Claim 41 depends from and includes all elements of claim 35.

As set forth above, Mroczkowski is deficient. Mroczkowski does not teach a device that is used to detect a target where detection sensitivity may be increased by including “a solution comprising nucleation-center forming entities for non-specifically binding” target.

Olsen is devoted to targeting gold sol to an analyte by specific targeting. See, for example, claim 1:

A method for the qualitative or quantitative determination of an analyte in a test sample wherein a reagent comprising a gold sol bound to a substance capable of specifically binding to said analyte or to a specific binding partner therefor, is caused to be immobilized in bound form on a membrane support to provide an indication of the presence or quantity of the analyte in the sample by detection of the presence of intensity of color of immobilized gold sol, characterized in that at least 75% by weight of the gold particles of the gold sol have a mean diameter of less than 5 nanometers and not less than 3 nanometers with the provision that the analyte and the substance capable of specifically binding to the analyte are an antigen/antibody or hapten/antibody pair.

Olsen, column 10, lines 25 – 38, underline and bold emphasis added. See also Olsen, column 4, lines 42 – 65. By teaching specific binding of gold sol to the analyte, Olsen fails to teach the elements of claims 35 or 41 and teaches away from the claims.

The combination of Mroczkowski and Olsen fails to teach all of the elements of either of claims 35 or 41, and teaches away from the claims. Applicants believe that the rejection is overcome and request withdrawal of the same.

Mroczkowski, Olsen and Hollis I

The Action rejects claims 36, 53 and 60 over Mroczkowski in view of Olsen and Hollis. These claims depend from and include all elements of claim 35. As set forth above, these references fail to teach a nucleation-center forming entity that non-specifically binds to a target. Further, the combination teaches away from non-specific binding, and toward specific binding.

Based on the foregoing, Applicants believe that the rejection of claims 36, 53 and 60 is overcome and request withdrawal of the same.

Mroczkowski, Olsen and Hollis II

The Action rejects claims 38 and 39 over Mroczkowski in view of Olsen and Hollis. Claims 38 and 39 directly or indirectly depend from claims 1 and 24, respectively, and include all elements of their respective base claims. For at least

the same reasons as set forth above, Applicants believe that the rejection of claims 38 and 39 is overcome and request withdrawal of the same.

Mroczkowski, Hollis and Althainz

The Action rejects claim 56 over Mroczkowski in view of Hollis and Althainz (Sensors and Actuators B (1996) 33(1-3): 72-76). Claim 56 depends from and includes all of the elements of claim 1.

The Action states that Althainz teaches scanners. The addition of scanners to the combination of Mroczkowski and Hollis fails to overcome the above-mentioned deficiencies of these references. For at least the same reasons as set forth above, Applicants believe that the rejection of claim 56 is overcome and request withdrawal of the same.

Mroczkowski, Olsen and Althainz

The Action rejects claim 61 over Mroczkowski in view of Olsen and Althainz. Claim 61 depends from and includes all of the elements of claim 35.

The Action states that Althainz teaches scanners. The addition of scanners to the combination of Mroczkowski and Olsen fails to overcome the above-mentioned deficiencies of these references. For at least the same reasons as set forth above, Applicants believe that the rejection of claim 61 is overcome and request withdrawal of the same.

Mroczkowski and Althainz

The Action rejects claim 63 and states that it is obvious over Mroczkowski in view of Althainz. Claim 63 depends from and includes all of the elements of claim 37. The Action states that Althainz teaches scanners. The addition of scanners to Mroczkowski fails to overcome the above-mentioned deficiencies of Mroczkowski. For at least the same reasons as set for the above, Applicants believe that the rejection of claim 63 is overcome and request withdrawal of the same.

Claim Rejections – Double Patenting

U.S. Patent No. 7,364,920

The Action rejects claims 1, 4 – 9, 18 – 20, 22 – 26, 28, 43 – 44, 47 – 51, 55 – 57 and 65 under the doctrine of non-statutory obviousness-type double patenting over claims of U.S. Patent No. 7,364,920 either alone or in various combinations of the prior art references cited.

This application – U.S. Appln. No. 09/674,090 – was a national stage entry of PCT/IL99/00232. PCT/IL99/00232 claimed priority to IL 124322, which was filed May 4, 1998. The priority date of this application is May 4, 1998.

U.S. Patent No. 7,364,920 issued from U.S. Appln. No. 11/314,154, which was a continuation of 09/830,457, which was a national stage entry of PCT/IL99/00570. PCT/IL99/00570 was filed October 27, 1999 and published May 4, 2000. PCT/IL99/00570 claimed priority to IL 126776, which was filed October 27, 1998.

Based on the filing date of PCT/IL99/00570, U.S. Patent No. 7,364,920 is not prior art over this application. See MPEP 2136.03. Even the foreign priority date of PCT/IL99/00570 (October 27, 1998) is after the foreign priority date of this application (May 4, 1998). U.S. Patent No. 7,364,920 is not prior art under 35 U.S.C. § 102, 35 U.S.C. § 103 or the doctrine of non-statutory obviousness-type double patenting.

Applicants believe that the rejection of claims 1, 4 – 9, 18 – 20, 22 – 26, 28, 43 – 44, 47 – 51, 55 – 57 and 65 under the doctrine of non-statutory obviousness-type double patenting over claims of U.S. Patent No. 7,364,920 is improper. Applicants request withdrawal of the same.

U.S. Appln. No. 10/638,503

The Action provisionally rejects claims 1, 4 – 9, 18 – 20, 22 – 26, 28, 43 – 44, 47 – 51, 55 – 57 and 65 under the doctrine of non-statutory obviousness-type double patenting over claims of U.S. Appln. No. 10/638,503 in view of various combinations of the cited prior art references.

As set forth above, this application has a priority date of May 4, 1998.

U.S. Appln. No. 10/638,503 is a continuation of 09/830,457, which was a national stage entry of PCT/IL99/00570. PCT/IL99/00570 was filed October 27, 1999 and published May 4, 2000. PCT/IL99/00570 claimed priority to IL 126776, which was filed October 27, 1998. Based on the filing date of PCT/IL99/00570, U.S.

Appln. No. 10/638,503 is not prior art over this application. See MPEP 2136.03. Even the foreign priority date of PCT/IL99/00570 (October 27, 1998) is after the foreign priority date of this application (May 4, 1998). U.S. Appln. No. 10/638,503 is not prior art under 35 U.S.C. § 102, 35 U.S.C. § 103 or the doctrine of non-statutory obviousness-type double patenting.

Applicants believe that the rejection of claims 1, 4 – 9, 18 – 20, 22 – 26, 28, 43 – 44, 47 – 51, 55 – 57 and 65 under the doctrine of non-statutory obviousness-type double patenting over claims of U.S. Appln. No. 10/638,503 is improper. Applicants request withdrawal of the same.

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Conclusion

If the Examiner believes that any additional matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1, 4 - 9, 18 - 20, 22 - 26, 28, 35 - 39, 41, 43 - 44, 47 - 51, 53 - 57, 60 - 63, and 65, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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Enclosures

New Declaration
REPLACEMENT SHEETS 3/44, 18/44, 23/44, 24/44, 28/44 and 44/44
ABSTRACT